Dirichlet problems with critical growth
via a local minimum theorem

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A local minimum for a continuously Gâteaux differentiable function, possibly unbounded from below and without any weak continuity assumption, is presented. Relations between the mountain pass theorem and local minima are then pointed out. As applications, the existence and multiplicity of solutions for nonlinear differential problems are established. Moreover, an elliptic Dirichlet problem with critical exponent is investigated.

References

[1] *G. Bonanno*: A critical point theorem via the Ekeland variational principle. Nonlinear Anal. *75* (2012), 2992–3007.

[2] *G. Bonanno*: A characterization of the mountain pass geometry for functionals bounded from below. Differ. Integral Equ. *25* (2012), 1135–1142.

[3] *G. Bonanno*: Relations between the mountain pass theorem and local minima. Advances in Nonlinear Analysis *1* (2012), 205–220.

[3] *G. Bonanno, G. D'Aguì*: Critical nonlinearities for elliptic Dirichlet problems. Dynam. Systems Appl., to appear.